NISHIDA
Serial No. 09/986,987

**Atty Dkt:** 900-407
**Art Unit:** 1763

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An ashing method comprising the steps of:

holding a substrate having a resist mask formed on an insulating film in a chamber of an ashing apparatus;

applying an RF electric power to activate an oxygen-containing gas introduced in the chamber in order to perform ashing of the resist mask, while an RF electric power is applied to the substrate, thereby obtaining formation of a protective film on a surface of the insulating film;

wherein a ratio (Ws/Wb) of the RF electric power (Ws) for activating the oxygen-containing gas to the RF electric power (Wb) applied to the substrate is set so that the change rate of the dielectric constant of the insulating film before and after ashing is 10 % or less; and

wherein the ratio (Ws/Wb) is controlled to be 5 or less.

2. (Original) The ashing method according to claim 1, wherein the RF electric power (Wb) applied to the substrate is controlled to be a predetermined value or higher.

3. (Original) The ashing method according to claim 2, wherein the RF electric power (Wb) is 150 W or higher.

4. (Original) The ashing method according to claim 1, wherein the RF electric power (Ws) for activating the oxygen-containing gas is 1000 W or less.

5. (CANCELLED)

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6. (CANCELLED)

7. (Previously Presented) The ashing method according to claim 13, wherein a ratio (Ws/Wb) of the RF electric power (Ws) for activating the oxygen-containing gas to the RF electric power (Wb) applied to the substrate is set so that the change rate of the dielectric constant of the insulating film before and after ashing is 10 % or less.

8. (Original) The ashing method according to claim 1, wherein the substrate is set to a temperature of about 20°C or lower.

9. (Original) The ashing method according to claim 1, wherein the insulating film formed on the substrate is a low dielectric constant film having a dielectric constant of 3.5 or less.

10. (Original) The ashing method according to claim 1, wherein the RF electric power applied for activation of the oxygen-containing gas is supplied by a first power source and the RF electric power applied to the substrate is supplied by a second power source via a lower electrode formed in the chamber.

11. (Original) The ashing method according to claim 10, wherein the lower electrode supports the substrate and is controlled to have a predetermined temperature for maintaining the temperature of the substrate.

12. (Original) The ashing method according to claim 1, wherein the oxygen-containing gas is an oxygen gas, an ozone gas, a mixture thereof, or a mixture of either or both of these gases with a $N_2$ gas or a $CF_4$ gas.

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13. (Currently Amended) An ashing method comprising the steps of:

(1) situating a substrate having a resist mask formed on an insulating film in a chamber of an ashing apparatus;

(2) introducing an oxygen-containing gas into the chamber;

(3) applying an RF electric power to activate the oxygen-containing gas;

(4) applying RF electric power to the substrate while performing step (3);

wherein steps (2) - (4) ) result in formation of a protective film on a surface of the insulating film and are performed in a manner substantially to avoid bonding that would substantially change a dielectric constant of the insulating film; and

wherein a ratio (Ws/Wb) of the RF electric power (Ws) for activating the oxygen-containing gas to the RF electric power (Wb) applied to the substrate is controlled to be 5 or less.

14. (Previously Presented) The ashing method according to claim 13, wherein steps (2) - (4) are performed in a manner substantially to avoid at least one of Si-H bonding and H-OH bonding with the insulating film.

15. (CANCELED)

16. (Previously Presented) The ashing method according to claim 13, wherein steps (2) - (4) are performed in a manner so that a rate of change of the dielectric constant of the insulating film is less than about 10% when the RF electric power applied to the substrate in step (4) is at least about 150 W.

17. (Previously Presented) The ashing method according to claim 13, wherein steps (2) - (4) are performed in a manner so that a rate of change of the dielectric constant of the insulating film is less than about 8% when the RF electric power applied to the substrate in step (4) is at least about 190 W.

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18. (Previously Presented) The ashing method according to claim 13, wherein steps (2) - (4) are performed in a manner so that a rate of change of the dielectric constant of the insulating film is less than about 5% when the RF electric power applied to the substrate in step (4) is at least about 250 W.

19. (Currently Amended) An ashing method comprising the steps of:

holding a substrate having a resist mask formed on an insulating film in a chamber of an ashing apparatus;

applying an RF electric power to activate an oxygen-containing gas introduced in the chamber in order to perform ashing of the resist mask, while an RF electric power is applied to the substrate, thereby obtaining formation of a protective film on a surface of the insulating film;

wherein the RF electric power (Ws) for activating the oxygen-containing gas is 1000 W or less; and

wherein a ratio (Ws/Wb) of the RF electric power (Ws) for activating the oxygen-containing gas to the RF electric power (Wb) applied to the substrate is controlled to be 5 or less.

20. (Previously Presented) The ashing method according to claim 19, wherein a ratio (Ws/Wb) of the RF electric power (Ws) for activating the oxygen-containing gas to the RF electric power (Wb) applied to the substrate is set so that the change rate of the dielectric constant of the insulating film before and after ashing is 10 % or less.

Please add the following new claims 21 – 23:

21. (New) The ashing method according to claim 1, wherein the insulating film is a low dielectric constant film having a dielectric constant of 3.5 or less.

22. (New) The ashing method according to claim 13, wherein the insulating film is a low dielectric constant film having a dielectric constant of 3.5 or less.

23. (New) The ashing method according to claim 19, wherein the insulating film is a low dielectric constant film having a dielectric constant of 3.5 or less.